

JUICER

5 Cross-Reference to Related Application:

This application is a continuation, under 35 U.S.C. § 120, of
copending international application No. PCT/EP2002/009468,
filed August 23, 2002, which designated the United States;
this application also claims the priority, under 35 U.S.C. §
10 119, of German patent application No. 101 42 502.3, filed
August 30, 2001; the prior applications are herewith
incorporated by reference in their entirety.

Background of the Invention:

15 Field of the Invention:

The invention relates to a juicer that is driven by an
electromotor and that has a central projecting element that
tapers in the upward direction for pressing a piece of fruit,
the juicer being drivable by the electromotor at a first rpm
20 given actuation of a first switching device.

European Patent EP 0 362 058 B1 describes a juicer that is
driven by an electromotor. There, the motor, by a drive belt
and pulleys, drives a shaft at the top end of which the juicer
25 is disposed together with an upwardly tapering element that

projects from the middle thereof. The known juicer can be driven at rates of rotation between 2000 and 2500 rpm.

The activation of a known motorized juicer is realized either
5 by the actuation of a switch by the user setting the electromotor in rotation, or by the exertion of pressure on the element by the user activating the juicer by a lever mechanism that is connected with it working in conjunction with toothed gearwheels.

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Summary of the Invention:

It is accordingly an object of the invention to provide a juicer that overcomes the hereinafore-mentioned disadvantages of the heretofore-known devices of this general type and that
15 makes the operating of a juicer more convenient.

With the foregoing and other objects in view, there is provided, in accordance with the invention, a juicer, including an electromotor having at least two driving speeds,
20 a first switch connected to the electromotor, a second switch connected to the electromotor, a centrally disposed element projecting upward in a taper for pressing a piece of fruit, and the electromotor being operatively connected to the element and rotationally driving the element at a first speed
25 upon actuation of the first switch and at a second speed

greater than the first speed upon actuation of the second switch.

With the objects of the invention in view, there is also
5 provided a juicer, including an electromotor having at least
two driving speeds, a first switch connected to the
electromotor and switching the electromotor to a first driving
speed, a second switch connected to the electromotor and
switching the electromotor to a second driving speed greater
10 than the first driving speed, a centrally disposed element
projecting upward in a taper for pressing a piece of fruit,
and the electromotor being operatively connected to the
element and rotationally driving the element at the first
driving speed upon actuation of the first switch and at the
15 second driving speed upon actuation of the second switch.

With the objects of the invention in view, there is also
provided a juicer, including an electromotor having at least
two driving speeds, a first means for switching the
20 electromotor to a first rotational speed, a second means for
switching the electromotor to a second rotational speed
greater than the first rotational speed, a centrally disposed
element projecting upward in a taper for pressing a piece of
fruit, and the electromotor being operatively connected to the
25 element and rotationally driving the element at the first
rotational speed upon actuation of the first switching means

and at the second rotational speed upon actuation of the second switching means.

A juicer according to the invention provides a second
5 switching device with which the element can be driven at a second, higher speed.

With the aid of this function, the juice that is pressed from the fruit is centrifuged to the wall of the collecting
10 container at a higher rate, and the fruit pulp is also thrown against the wall. As a result, juice is also squeezed from the pulp so that a larger yield of juice can be achieved with the inventive juicer.

15 The pressure that is automatically exerted on the element by the user when she wants to press a piece of citrus fruit simultaneously produces electrical contact and switches the motor on. When the additional switching device is, then, actuated, the rpm is increased again, for instance, to 4,000
20 rpm.

In accordance with another feature of the invention, the juicer is characterized by actuating the second switching device by a button.

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In accordance with a further feature of the invention, it has proven advantageous when the second switching device can be actuated only if the first switching device has been actuated.

- 5 In accordance with a concomitant feature of the invention, the button is particularly easy to access when it is disposed on a jacket wall or exterior housing wall of the juicer.

Other features that are considered as characteristic for the
10 invention are set forth in the appended claims.

Although the invention is illustrated and described herein as embodied in a juicer, it is, nevertheless, not intended to be limited to the details shown because various modifications and
15 structural changes may be made therein without departing from the spirit of the invention and within the scope and range of equivalents of the claims.

The construction and method of operation of the invention,
20 however, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings.

Brief Description of the Drawings:

FIG. 1 is a cross-sectional view of a juicer according to the invention;

5 FIG. 2 is a fragmentary, enlarged, cross-sectional view of a switch of the juicer of FIG. 1;

FIG. 3 is a block and schematic circuit diagram of the juicer of FIG. 1; and

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FIG. 4 is a perspective view from the side of a housing of the juicer of FIG. 1.

Description of the Preferred Embodiments:

15 Referring now to the figures of the drawings in detail and first, particularly to FIG. 1 thereof, there is shown juicer 1 having an electromotor 2 as drive motor. This drives onto a drive shaft 3. At the end of the drive shaft 3 is a toothed gearwheel 4, which meshes with a toothed gearwheel 5.

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The toothed gearwheel 5 is fastened to a drive shaft 6. At its top end, the drive shaft 6 bears an element 7 that is shaped like a rotation paraboloidal, cone, truncated cone, or hemisphere. The element 7 includes ridges with depressions in
25 between, which serve for pressing a piece of fruit. The pressed juice runs into a collecting container 8 that

surrounds the element 7 and rotates together with it by the drive shaft 8. This container includes slots from which the juice flows into a stationary bowl 9.

- 5 The underside of the element 7 is connected to a collar 10, which is fixed to the drive shaft 6. The collar 10 contacts a shaft sleeve 13 by way of a compression spring 11 and a sliding disk 12.
- 10 When a piece of fruit is placed on the element 7 to press the fruit, and force is exerted on the element 7, the element 7 is pressed down together with the collar 10 and the drive shaft 6 counter to the restoring force of the compression spring 11, whereby the drive shaft 6 is moved in the direction of arrow
- 15 P.

Based on such axial movement, the drive shaft 6 actuates a rocker switch 15 that is fastened at attachment point 14 (FIG. 2) and that can be pivoted about its free end so that the

20 switch presses against a caliper 16. The caliper 16 is received by a housing retainer 17. With the closing of a switch contact 18 (FIG. 3) by the caliper 16, the electromotor 2 is actuated and drives the element 7 together with the collecting container 8 by the drive shafts 3, 6, the

25 gearwheels 4, 5, and the collar 10, whereby juice is pressed from the fruit.

The electromotor 2 and the switch contact 18 are part of an electrical circuit that is supplied with a voltage V. The circuit contains a microcontroller 20 that is clocked by a
5 clock 19 and that, by way of a control line, controls a triac 22 by which the electromotor 2 is controlled. A rectifier bridge circuit 23 is connected in series with the electromotor. Coils 24, 25 serve for signal smoothing.

10 A switch 26 is contained in the circuit. Actuation of the switch 26 is by a button 27 (FIG. 4) that is disposed on an exterior housing wall 28 and causes a higher current to be supplied to the electromotor 2 based on a corresponding actuation by the microcontroller 20. Thus, the electromotor 2
15 rotates at a higher speed.

The circuit is wired either so that the switch 26 must be actuated in addition to the actuation of the switch 18, or so that either the switch 18 or the switch 26 is actuated.

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According to the invention, a switch 26 is provided for causing the juicer, namely the element 7 that receives the fruit, to rotate, at a given rpm. By a button 27 disposed on the exterior housing wall 28, the microcontroller 20 is
25 actuated to supply a higher current to the electromotor 2 and to cause it to rotate at a speed higher than the given rpm.

As such, fruit juice is pressed from pulp that has already separated from the fruit.